



Navy Air Energy Conservation (Air ENCON) Program

NDIA Environment, Energy Security, and Sustainability Symposium (E2S2)

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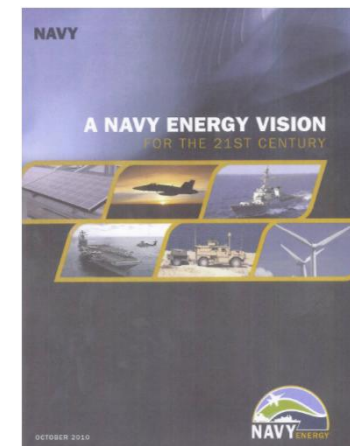
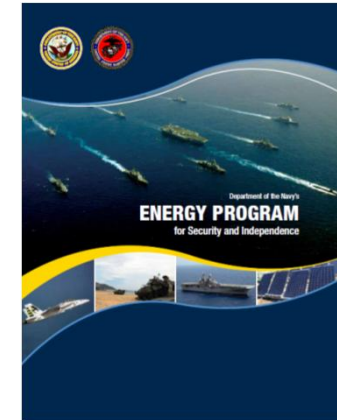
Executive Summary

- Air-ENCON is a key component of the Navy's drive to achieve SECNAV's goals of reducing fuel and energy use across the Fleet
- Goals: Reduce reliance on petroleum and create a culture of conservation in NAE, without impacting mission or safety
 - Primary focus is to reduce non-mission fuel burn
 - A 4% overall reduction is equivalent to about 21 million gallons, or roughly \$85 million per year
- Approach is to foster innovation – initial practices being developed:
 - Hot Pit Refueling
 - SMART
 - Reverse Vertical Separation Minimum (RVSM)



Program Supports the Navy's Energy Vision

- CNO signed the Navy Energy Vision in October 2010 and established Task Force Energy to drive implementation
 - Maritime
 - Expeditionary
 - Aviation
 - Shore
- Aviation Working Group (AWG) proposed creation of Air Energy Conservation (Air ENCON) program, modeled after successful Incentivized ENCON (iENCON) program
- Air ENCON Integrated Product Team (IPT) is responsible for direct program implementation Reports to CNAF N40, who is responsible for overall program success
- Program supports SECNAV's five energy goals towards Energy Security and Independence

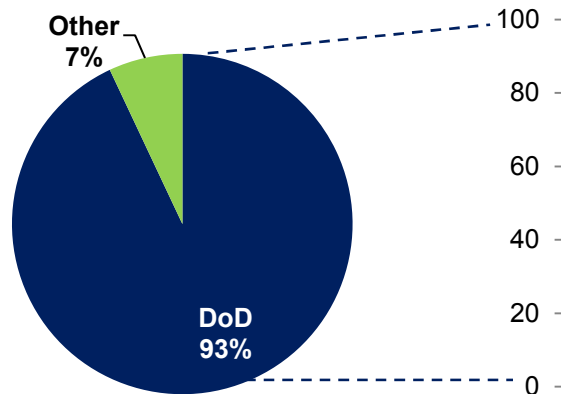




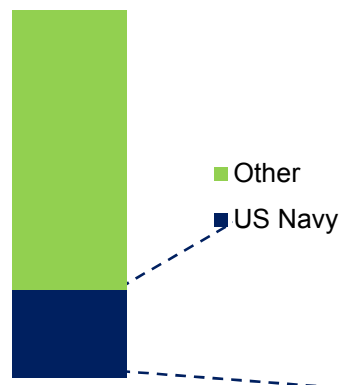
Energy consumption by the numbers - DoD & Navy

- In 2010, the U.S. burned 7.1 billion barrels of fuel per year, roughly 25% of world demand – the Federal Government is 2% of this
- For every \$1 rise in the price of petroleum, the Navy's fuel bill increases by \$31 million per year

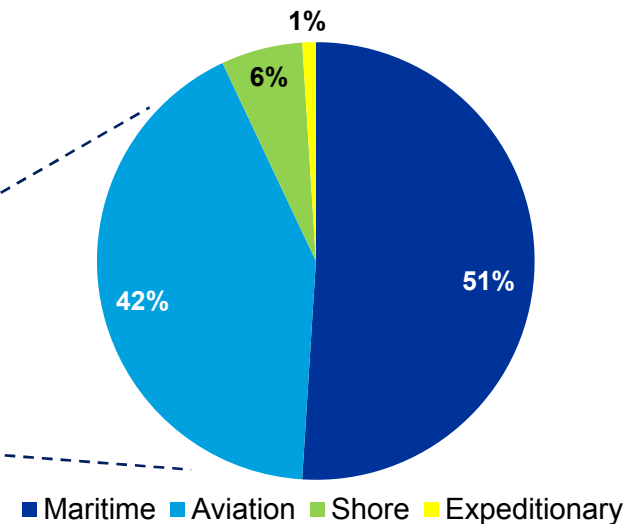
Total USG Liquid Fuel Use



DoD Fuel Use



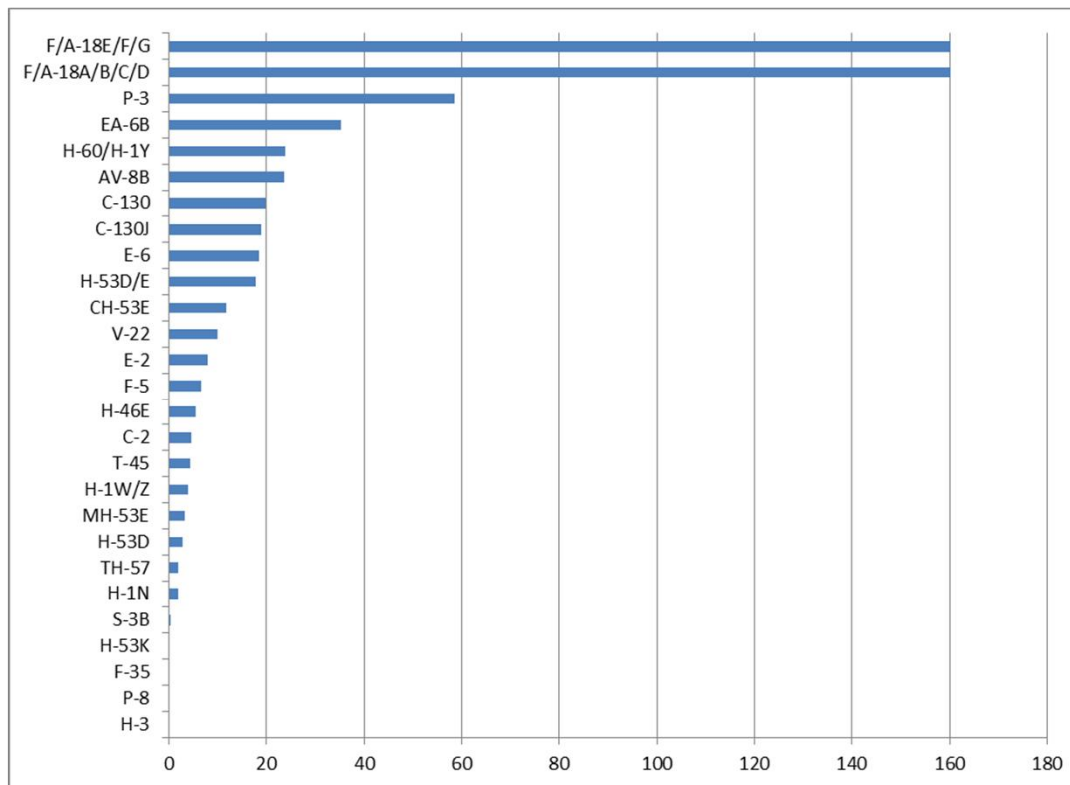
US Navy Fuel Use by Function





Snapshot of Naval Aviation Fuel Use

FY 2010 Fuel Consumption by T/M/S



Source: CAVTS 2011

Key Facts:

- FY2010 consumption was 580 million gallons
- F/A-18's consume over 50% of naval aviation fuel
- Fixed wing accounts for 91% versus rotary

Key Issues:

- Defining and reducing non-mission consumption
- Maintaining proper Readiness (i.e., flight hours)
- Not impacting Contingency Operations
- Not impacting Safety





Air-ENCON Objectives

Establish a Naval Air Enterprise-wide program that:

- Reduces reliance upon petroleum
- Promotes a culture of energy awareness
- Identifies and communicates best practices
- Eliminates inefficient policy/cultural paradigms
- Rewards innovation and most efficient utilization of energy resources

Without adversely impacting mission or safety



Contributes to CNO Target to Reduce Energy Use Afloat by 15% by 2020





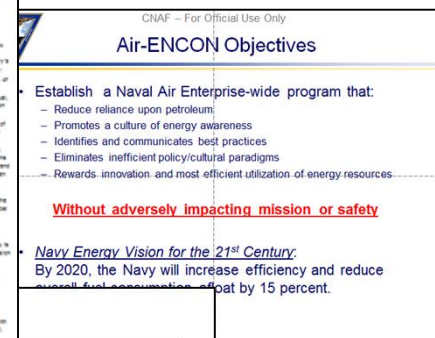
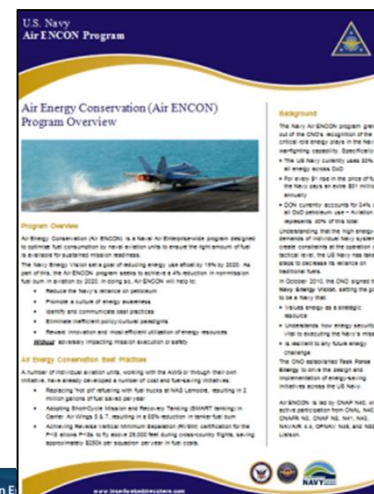
Key Elements of Program

- **Develop Process innovations:** Assess fuel saving best practices identified within the NAE for potential wide deployment through Air ENCON Program. This includes conducting risk assessments and detailing the changes in standard work packages.
- **Establish Metrics and Reporting:** Establish a baseline of consumption and a measurement and reporting scheme that accounts for deployment phases and is applied at the unit level.
- **Communicate, train, and implement changes:** Effectively communicate program intent and policy and process change detail to the right stakeholders (e.g., leadership, aviators, maintenance personnel)
- **Recognize and reward progress:** Develop an awards and recognition element that facilitates program adoption, encourages innovation, and builds a “Culture of Conservation”



Communications Strategy and Products

- Conducted a stakeholder analysis to identify information needs and available media channels
- Developed a Strategic Communications plan to guide media development and implementation
- Developing a series of communications products to deliver key messages
- A key information portal will be the Air ENCON Web site





Measuring Success (Metrics)

- Key metric will be overall fuel reduction
 - Program will track fuel use by squadron over time
 - Quarterly reports on Squadron and Fleet usage
- Program will also track total usage and fuel efficiency by TMS
- Metrics will account for Operational fuel usage
- Program will incorporate “Soft Metrics” to measure change
 - Awareness
 - Fuel reporting compliance
 - Training attendance
 - Identification and submission of innovations





Process Innovations form the Core of the Program

- Reduced fuel dump
 - Short-Cycle Mission and Recovery Tanking (SMART)
 - Operations and Maintenance Coordination
- Cold Refueling
 - Replace “hot pit” refueling with “cold” truck refueling for fixed-wing aircraft
 - 2006 Lemoore study savings
- Other initiatives
 - Reduced Vertical Separation Minimum
 - Minimize external stores in-transit





Short-cycle Mission And Recovery Tanking (SMART)

- Benefits to SMART have already been reported and verified
 - Carrier Air Wings 5 and 7
 - NSAWC Journal Article – Winter 2008
 - 2009 deployment
 - Continued Fleet Utilization
- Potential Savings
 - 65% reduction in tanker burn demonstrated by CVW-7/3
 - Reduced tanker flight time and increased tanker CV recovery
 - Reduces amount of fuel carrier needs to be resupplied with, creating Navy-wide savings





Truck (“Cold”) Refueling

- 2006 Lemoore Study examined truck vs. “hot pit” refueling
 - “Hot pit” refueling cost 18 minutes and 70 gallons per aircraft per refueling
 - Expanded truck refueling reduced use of hot pits by approximately 50%
- Additional Benefits
 - Increased aircraft component lifetimes, squadron Temporary Assigned Duty (TAD) personnel, reduced aircrew downtime
- Additional Costs
 - Truck maintenance, refueling personnel
- Already performed in parts of aviation community (MH-60 etc.)



Other practices under consideration

- RVSM Certification allows F-18s to fly **between 28,500 and 41,000 feet** (where the vertical separation between aircraft is reduced to 1,000 ft) over the continental US
 - More efficient fuel use during cross-country flights
- Minimize external stores carriage to mission essential
- Fueling/Defueling Practices
 - Appropriate fuel use for FCLP
 - Appropriate fuel load for maintenance
- Maintenance
 - Ground support equipment to perform maintenance without APU



QUESTIONS?

